

FROM THE TRANSACTIONS OF THE ROYAL SOCIETY OF CANADA
SECOND SERIES—1899-1900

VOLUME V

SECTION IV

GEOLOGICAL AND BIOLOGICAL SCIENCES

Fresh Water Fishes and Batrachia

OF THE

PENINSULA OF GASPE, P.Q.

AND THEIR

Distribution in the Maritime Provinces of Canada

By PHILIP COX, Ph.D.

FOR SALE BY

**J. HOPE & SONS, OTTAWA; THE COPP-CLARK CO., TORONTO
BERNARD QUARITCH, LONDON, ENGLAND**

1899

V.—*Fresh water Fishes and Batrachia of the Peninsula of Gaspé, P.Q., and their distribution in the Maritime Provinces of Canada.*

By PHILIP COX, PH. D.

(Presented by Prof. J. Macoun, and read May 20th, 1899.)

A glance at the map will suggest many reasons, and reflection on its geological history even more, for including the Quebec slope at least of the Baie des Chaleurs with New Brunswick, Prince Edward Island, and much of Nova Scotia in one maritime biological province, the unity of which is marked not so much by the occurrence of peculiar forms, as by the general similarity of the flora and fauna. Portions of this region, it is true, differ much in the extremes of heat and cold, snow-fall, length of winter and other physical aspects, but the average annual temperature is nearly the same throughout; and hence the adaptive power of most plants and lower vertebrates, found anywhere within it, enables them to spread over and occupy the whole of the province. But while the means plants make use of for their dispersal are various, and effective enough to account for their presence here and there, and while batrachia possess ample powers for the same purpose, it is altogether different in the case of fresh-water fishes, the study of whose distribution often presents problems not to be solved by a knowledge of their life-history nor existing physical conditions. Especially is this the case with regard to rare species, occurring at remotely isolated stations over an immense area. Forced by the logic of facts to reject the usual theory, and recognizing the great antiquity of the fish, the student in ichthyology prefers to find an explanation of these phenomena in the evidence of a different relation of the land and water surfaces to each other at different epochs in the world's history. In this view isolated colonies are regarded as the remnants of an ancient and widely distributed race, which, in favourable environments, have here and there survived the great changes that elsewhere engulfed their kind. A few interesting examples of this nature are met with in Gaspé and on the Bay of Fundy coast, and will be discussed at length in their proper place.

Though the average annual temperature of all parts of the coast region of this biological province may be nearly the same, yet the summer, and probably also the winter, temperature of the Gaspé rivers is much lower than what obtains in the rivers of New Brunswick and Nova Scotia, due to the former rising in the Notre Dame Mountains,

and being fed by cold alpine streams. They are, too, more rocky, rapid, and boisterous, especially in their upper courses, and afford only in the lower stretches, and in brooks and ponds near their mouths, the degree of quietness and heat most fresh-water forms, notably our cyprinids, require. In the examination of these rivers a gradual decrease in the number of species and individuals is also observed as one goes eastward, and eventually all purely fresh-water forms disappear, not one being met with in the Grand, York, or Dartmouth rivers. The cause does not seem to be in the rivers themselves, for in character and temperature, in the presence of warm ponds and lakes in their lower valleys, they are similar to the others. The fact, however, may be accepted as evidence of the small part birds and other accidental means play in the diffusion of fish-life, and as confirming in part the theory which ascribes the presence of certain small fishes in the upper rivers to an ancient eastward extension of the Restigouche.

Catostomus commersoni, Lac. Big-scaled sucker. Carp (French).

A widely distributed and variable form, occurring in the Grand Cascapedia, Little Cascapedia, and Bonaventure rivers. Common also in New Brunswick and in Nova Scotia (J. M. Jones).

While the stock of the Restigouche, including the Metapedia, and all New Brunswick waters often shows a reduction in the typical scale formula (10-65-9) and a lack of regularity in the labial papillæ, the deviation from the scale formula is more marked and constant among the Gaspé fish. Here it is 9-60-7, a divergence not at all important so far as the number of transverse series (60) is concerned; but the decrease in the longitudinal rows is significant; for, as the fish are robust and attain a length of eighteen inches, the scales are relatively larger. Were this form, however, derived from typical *commersoni*, variation of an opposite character might be looked for, as the genesis, size, and arrangement of the scales are more or less correlated with the degree of bodily activity life in a given medium requires; so that a reduction in the size, but an increase in the number is the usual result of active movements, rapid currents, low temperature, and alpine or northern distribution. The ancestors of this sucker may have been of lacustrine habit, and closely related to *commersoni*. It was a disappointment not to find in the Gaspé rivers *C. longirostris*, LeSueur, the Long-nosed, or Northern, Sucker, not uncommon in the St. John river, N.B.; nor does it seem to occur in the Restigouche or Metapedia.

CYPRINIDÆ.

Leuciscus cornutus, Gnthr. Red-fin.

This attractive, well-known, but variable little cyprinid was found in small numbers in brooks, emptying into the Grand Cascapedia near its mouth, the only station in the peninsula. It is generally distributed in New Brunswick, and occurs also in the Metapedia, but the Cascapedia form is a well-marked variety, deserving recognition as a boreal type. The size is small, barely four inches in length; coloration brilliant, with the two commonly evanescent lateral golden bands very distinct in life, and visible after months of immersion in spirit; the scale formula shows a slight increase, with 27 in front of the dorsal, while the New Brunswick and Metapedia shiners have from 16 to 22. The anal fin-rays are 8 instead of 9, and the free margin of the dorsal is straight or slightly convex, not concave, due to a shortening of the anterior rays, which, when the fin is depressed, about equal the posterior. As will, however, be pointed out subsequently, the latter, aside from more important differences, cannot be regarded as a modification of much significance or value. Caudal peduncle slender. All the fins, including chin and throat, scarlet.

Notemigonus chrysoleucus, Jor. Golden Shiner.

Like the last, this species was found in but one river valley in Gaspé, that of Grand Pabos, where it occurs in two small bodies of water near the coast, known as Lac à Canard and Murphy's Lake. It is in all respects typical except that the anal fin-rays are 12 instead of 13, but this variation is not uncommon among New Brunswick specimens. Occurs also in Metapedia river and lake.

This was the only fresh-water fish found on P.E. Island by Roy McLean Vanwart of Fredericton and the writer in 1896, while making an investigation of its batrachia and fishes. It was collected from Afton Lake, near Mount Stewart, and agrees with the Gaspé specimens in having 12 rays in the anal fin. No information could be had of the time nor manner of its introduction, nor was its presence known to the people living in the vicinity. As the lake is only a few acres in extent, without affluents, and with an outlet only during spring freshets, it is just possible that some admirer of this handsome fish planted it here long ago. Let this be as it may, the general absence of the small fresh-water fishes from an island so convenient to the coasts of New Brunswick and Nova Scotia, and lying in the general line of bird migration, argues strongly against the theory of the dispersal of fishes through

the agency of birds. Even where lakes and ponds belonging to different basins are made the summer home of fish and ova-eating birds, the results do not appear to be different. In New Brunswick the St. John river with its numerous branches and lakes seems favourably disposed in this respect to receive forms from the contiguous head-waters and lakes of the Androscoggin and other Maine rivers; but there is no proof of transmission by such means having occurred. It is true that twenty odd years ago, the Eastern Pickerel, *Esox reticulatus*, LeS., a common fish in the Maine rivers, made its appearance in the St. John, but inquiry revealed the fact that a few years before it had been artificially introduced into the Meduxnakik, a branch of the St. John. Hence it would seem more scientific to seek an explanation of the phenomena of distribution Gaspé presents, in some general and far-reaching cause, than to have recourse to a theory which seems inadequate to account for the facts.

Semotilus atromaculatus, Mitch. Horned Dace.

This species was found in small numbers in the Grand Cascapedia, Little Cascapedia, and New Carlisle lakes, but does not attain the size it reaches in New Brunswick. Moreover, it presents some variations from the usual type characters, especially in the more pointed muzzle, and the increased number of dorsal fin rays, which are *eight* instead of *seven*. The latter at least is a modification characteristic of the influence of a highland habitat, for mountain forms usually show an increase in these bony supports. The dace is partial to small streams and the upper courses of rivers, where it mingles with the Black-nosed Dace, *R. atronasus et cataractæ*, and hence is liable to pass from one river system to another, and attain in time a wide and continuous distribution. Common in all the waters of New Brunswick.

Phoxinus neogaeus, Cope. Minnow.

In Bull. No. XIII., Nat. Hist. Soc. of New Brunswick, pp. 44-7, will be found the first record of the occurrence of this little cyprinid on the Atlantic slope of North America. It was taken by the writer from a pond in the valley of the St. John at Manguerville, Sunbury Co., and submitted to Dr. B. E. Bean, of the National Museum, Washington, who identified it as this species. The writer subsequently collected it from several small lakes near the mouth of the river in the vicinity of St. John (Dark Lake, Water-works Lake, McDonald Lake); but, though carefully sought after, it has not been found at any other station in the

province. Previously its only records had been the Saginaw and Grand rivers, Michigan, and the Baraboo river, Wisconsin. As great activity has characterized ichthyological research in recent years, the lack of any further stations for this species being recorded might be accepted as proof of its rarity, and lend additional interest to the isolated and discontinuous character of its known distribution. But the occurrence here of this western (?) form, however interesting, was no surprise, as it was only an addition to certain facts which suggest a recent and more intimate relation between the fauna and flora of these sections; for it has long been known that many plants of western range are indigenous to the upper St. John, and that some small mammals, notably *Sorex richardsoni*, Bachman, not elsewhere reported east of Manitoba, are quite common in the valley of that river. (See Bull. No. XIV., Nat. Hist. Soc. of New Brunswick, p. 53-4.) It was, however, a genuine surprise to meet with this *Phoxinus* on the Gaspé coast, where it occurs in a small lake near New Carlisle, associated with another equally interesting and rare form of western and southern range, *Chrosomus erythrogaster*, Ag.

In New Brunswick the waters frequented by *Phoxinus* are generally free from predaceous fishes except perhaps *Anquilla rostrata*, LeS., and *Gasterosteus pungitius*, L., and its Quebec station is quite similar in this respect, so that the brightly coloured and otherwise attractive minnow may, in part, owe its preservation here and there to this cause.

It varies considerably, the stock of one lake being easily distinguished from that of another, not alone by size and coloration, but by certain structural differences. The Dark Lake fish are the smallest known to the writer, never exceeding two and three-quarters inches in length, whereas in McDonald Lake they are twice as long, the largest on record. The former, too, have the anal fin mostly 9-rayed; the dorsal insertion more posterior by two-thirds the length of the caudal; branchial leaflets oblong and stouter; gill-rakers shorter, less acute and with broader bases; snout shorter and blunter; lateral line relatively longer, and the band on the side intensely black in life, and forming a conspicuous patch on the operculum.

The Gaspé *Phoxinus* is very close to the larger New Brunswick forms, being about four inches in length; but the dorsal and anal are more pointed, the pectorals longer, and muzzle more acute. The dentition, however, is very irregular. In New Brunswick the females, strange to say, are more rosy in the breeding season than the males.

Chrosomus erythrogaster, Ag. Red-bellied Dace.

This species was reported from New Brunswick by the writer in the article referred to under *Phoxinus*, as occurring in Clear Lake, Lepreau,

St. John Co., a body of water only a few acres in extent with a little outlet into the Bay of Fundy near by, and having no connection with any river system. A year after he found it in a pond near Golden Grove, nine miles from St. John, and there remained, so far as he knows, its only Canadian records until August last, when he collected it from a few small lakes in the valleys of the Grand and Little Cascapedia, and from the Nouvelle lakes, near New Carlisle, P.Q., where it was associated with *P. neogaus*. Its distribution, too, recalls that of the latter, for it is reported from Michigan and a few points in the upper part of the Mississippi basin, and recently from Freeport, near Portland, Maine, by W. C. Kendall and Hugh M. Smith (Bull. U.S. Fish Commission, 1894, pp. 15-21). *Erythrogaster*, however, has only 7 dorsal rays, while all our *Chrosomi* have 8, and in this respect, too, the Maine specimens agree, as well as *C. eos*, Cope, from the Susquehanna, its next station to the south, which, however, presents a slightly different colour-pattern (Proc. Acad. Nat. Sci. Phil., 1861).

The Gaspé fish, especially those from the Grand and Little Cascapedia, are somewhat peculiar. The body is more slender and longer in proportion to the head; mouth more oblique; eye large $2\frac{2}{3}$ in snout; generally seven dark longitudinal lines or bands instead of five, the two extra ones often well defined in life, one on each side of the vertebral line, but seldom reaching the caudal peduncle; dorsal insertion more posterior. Size small, never exceeding $2\frac{1}{4}$ inches. This variety predominates in Harriman's Lake, Grand Cascapedia, and Goose Lake, Little Cascapedia. The Nouvelle (New Carlisle) dace resemble most those found in New Brunswick in coloration and proportion of parts. While the slender elongate body recalls *eos*, the scale formulae 82-28 is practically that of *erythrogaster*.

To sum up, the Clear Lake and Golden Grove, N.B., *Chrosomi* are very near to *erythrogaster*, but the Gaspé forms exhibit a divergence so marked and constant as to call for recognition; both are peculiar in the possession of 8 dorsal rays, and to continue to designate them by that name is to ignore the claims of important structural differences. This, however, is a question that can be more satisfactorily dealt with when larger areas have been investigated and more material accumulated.

Ceraticthys Plumbeus, Gunther.

This species was reported first from Loch Lomond, New Brunswick, by the writer in 1893, who subsequently found it at various other stations in the province. Being a hardy northern form, its occurrence in Gaspé

could be expected, where it was observed last summer in the Metapedia river and lake, Grand and Little Cascapedia, Nouvelle (New Carlisle) lakes, and in the basin of the Grand Pabos (Lac à Canard and Murphy's Lake.)

The genus is widely distributed in North America, consisting, however, of only a few closely allied species, whose differentiation is made to rest upon such slight and varying characters as to render the classification a mere recognition of the extremes of varieties, blending with each other through a series of intermediate forms. For the purpose of illustrating this point, it is only necessary to compare with one another the three most dominant northern forms, *C. plumbeus*, Gunther, *C. dissimilis*, Girard, and *C. greeni*, Jordan. The first is our alleged eastern form; the second peculiar to Lake Superior and the northern and northwestern portion of the Mississippi basin; the last a recently described species from Fort St. James, B.C. (Bull. Nat. Hist. Soc. of B.C., 1893). The element of chief value, indeed of any value, is the scale formula, which is as follows:—

C. greeni, 10-57-7.

C. plumbeus, 11-65-7 (11-60 to 70-7).

C. dissimilis, 12-68-8.

To one who has been afield, examined hundreds of specimens, and noticed the wide range of variation in this respect among stock of the same place or neighbouring places, the founding of species on such small, inconstant, and largely accidental differences must appear as little else than designating the extremes of variation in a given species. The writer has found *plumbeus* to vary from 10-60-7 to 12-70-8, and hence to comprehend within its limits the three above species, at least as far as this feature—the chief one—is concerned. To the relative height, too, of the dorsal and the form of its free margin is attached some significance in the attempted separation of *dissimilis* from *plumbeus*, the former having the margin nearly straight with anterior rays not produced, the latter with the margin concave and rays produced. When somewhat marked, constant, and associated with other contrasts, the feature would be of some value; otherwise it should be used with much caution, for it is just in these two respects that fins of the same species are often found to differ. Age, sex, season, and nature of summer and winter habitats are modifying causes. Anadromous tribes and fishes of lacustrine habit, resorting to the upper courses of rivers for breeding purposes, exhibit at different seasons a considerable variation in this respect. Our Atlantic salmon is a good example. Under these circumstances there is extra wear or abrasion of the anterior rays and external parts, often materially changing the outline. *Ceratichthys* exhibits all

these modifications. The stock of the Grand Cascapedia, Nouvelle and Grand Pabos have the anterior rays shortened and the margin either straight or more frequently convex, while the lake form from New Brunswick, Lake Metapedia, P.Q., and the Little Cascapedia, shows a concave margin with anterior rays produced. A short description of these two varieties may be given here.

(a) *C. plumbeus*, Gunther.

Size large, heavy anteriorly ; back slightly arched ; head broad and flattish, its profile nearly straight ; dorsal insertion a little anterior to last ray of ventral, midway between front of orbit and base of caudal. Mouth moderate ; barbel evident ; lateral band distinct. Dusky olive above, sides dull silvery, axils of paired fins and angles of mouth red.

Head, $4\frac{1}{2}$; depth, $4\frac{1}{2}$. D. 8, A. 8. Scales 11-62-7. Length about 6 inches.

Lake Metapedia and river ; Little Cascapedia, and throughout New Brunswick. Though agreeing in the main, the Little Cascapedia *plumbeus* shows some evidence of being a form intermediate between the lake variety and the one next to be described. The head is not so broad, and is more pointed. Dorsal insertion more posterior (midway between snout and base of caudal), with the hinder rays shorter, hence its margin more oblique. Tail very emarginate. Eye large. Lateral band dusky. Size smaller. A handsome fish.

(b) *C. plumbeus*, Gnthr. var.

Size moderate, stoutish ; head short, muzzle blunt, no barbel, mouth and eye small ; vent more posterior than in any other form. Fins all small. Dorsal insertion far back, behind last ray of ventral, midway between snout and ends of middle rays of caudal ; its anterior rays *shortened* and free margin *convex*, its first rays equalling the last when fin is depressed. Anal same form. Caudal peduncle short and stout, hardly compressed, and fin less emarginate.

Coloration brilliant. Back olive brown with the usual dark scales, and passing into steel-blue. A blackish band from eye to caudal, with a narrow pale one above ; sides silvery, with the region under the lateral band and extending from the operculum to the base of the caudal, almost scarlet in life.

Head, $4\frac{1}{2}$. Depth, $4\frac{1}{2}$. D. 8, A. 8. Scales, 12-70-8. Length, 4 inches. A beautiful little fish which deserves recognition as a well marked variety.

This is the form which the lower Gaspé rivers, Nouvelle and Grand Pabos, alone contain. It does not occur in New Brunswick.

Rhinichthys cataractæ (Val), Jordan. Long-nosed Dace.

Lake Metapedia, P.Q., and generally throughout New Brunswick.

R. atronasmus (Mitch.), Ag. Black-nosed Dace.

Cascapedia and Bonaventure rivers. Not uncommon in New Brunswick ; Nova Scotia, J. M. Jones.

These two species are with us very closely related, and present at times such an instability of characters as to suggest intergrading. None have the 7-rayed dorsal said to be peculiar to *atronasmus* further south ; that fin has always the 8 rays of *cataractæ*. The scale formulæ, too, show an approximation ; for *cataractæ* the average is about 12-62-7 or 8 ; for *atronasmus*, 11-60-7. The latter is peculiar in having a narrow silvery band bordering the dark lateral band above—a feature nowhere else ascribed to it.

PERCIDÆ.

Perca americana, Schranck. Yellow Perch.

Though many suitable stations for this species were met with in the peninsula of Gaspé, it was not seen east of the Metapedia, nor was it known to settlers nor Indians to occur in the country. It is, however, quite abundant in Metapedia river and lake, and is generally distributed in New Brunswick and Nova Scotia. It is in all respects typical except in the number of anal fin-rays which are almost invariably II. 6 instead of II. 7.

CYPRINODONTIDÆ.

Fundulus diaphanus, LeSu. Spring Minnow.

This, the only fresh-water representative of the family in eastern Canada, so far as the writer knows, is very widely distributed ; and, as is usual with such a species, varies greatly. Its occurrence in New Brunswick was first reported by the writer in Bull. No. XIII. Nat. Hist. Soc. of N.B., pp. 5-7, and Roy McLean Vanwart and he collected it in Hillsboro river and at Rustico, P.E. Island, in June, 1896.

Common in the Bonaventure, Grand Pabos, York, and Dartmouth rivers, Gaspé. Abundant in the lower course of the St. John, N.B., and in lakes about the Bay of Fundy.

The Bonaventure fish, however, are peculiar in the reduced scale formula, narrow and shorter head and snout, scarcely enlarged teeth in outer row, lemon-yellow of inferior parts and fins, and shorter and stouter body.

As *diaphanus* is more or less an anadromous form but capable of living permanently in fresh water, its general distribution throughout the maritime provinces and Gaspé was to be expected.

COTTIDÆ.

Fresh-water sculpins are diminutive fish, affecting lakes, rivers, and especially rocky mountain streams, where they skulk about under cover of bottom objects, darting quickly across interspaces and disappearing suddenly, showing in their rapid movements fear of lurking enemies. Their food is found adhering to pebbles and rocks or creeping on the bottom, and consists largely of the aquatic larvæ of insects, crustacea, and worms. They also destroy immense quantities of trout spawn. Their habits and coloration make them hard to detect; but if a few stones in the bed of a stream be cautiously turned over, the observer will be often surprised at the number of these little denizens found skulking beneath. Like other small fresh-water fishes of great power of adaptation to environment, these little cottoids seldom exhibit much stability in what are usually regarded as specific characters, so that the classification of the members of the genus *Uranidea*, to which nearly all our forms belong, consists largely in the recognition of certain extremes of variation. Hence the description and synonymy of this genus are very much confused. A large number of species and a larger number of varieties, have been described by various authors, especially by Girard in the "Monograph of the Fresh-water Cottoids," but there is little unanimity among them, and the whole genus needs a thorough revision.

Uranidea gracilis, Putnam. Miller's Thumb.

Metapedia River and Nouvelle River, P.Q. This species was first reported from the Maritime Provinces by the writer in 1896, who collected it from Green River, Victoria Co., N.B., and had it identified by Dr. B. E. Bean, of the Smithsonian Institution, Washington.

U. boleoides (Girard), Jordan. Miller's Thumb.

Metapedia River, with the last from which it is hardly separate. Miramichi, Restigouche and St. John rivers, N.B.

U. richardsoni, Ag. Miller's Thumb.

In all the Gaspé rivers, except those discharging into Gaspé Basin. Miramichi and Restigouche, New Brunswick. Most of our northern miller's thumbs belong to this species, which should more properly be

classed as a *Cottus*, for the ventral fin has one concealed spine and four soft rays, while *Uranidea* has but three of the latter. Its varieties are as numerous as its localities, but the following was the most conspicuous met with :—

U. richardsoni, Ag. var.—A peculiar type from Bonaventure River, distinguished by its tadpole shape, wide separation of the dorsals, and uniform black colour.

SALMONIDÆ.

Coregonus labradoricus, Rich.? White Fish.

A *Coregonus* occurs sparingly in the Grand Cascapedia, of which specimens could not be obtained ; but, judging from descriptions given by persons familiar with it, the writer thinks it is the above species. It seems confined to this river, for guides, settlers and Indians had never met with it elsewhere on the peninsula. Not uncommon in the St. John River, N.B., and in many of its tributary streams and lakes, especially above Grand Falls, where it is associated with *C. quadrilateralis*, Rich. ; found also in the Restigouche and Metapedia. Our form at least is very closely allied to *C. albus*, LeSu., of the Great Lakes and north-westward, of which it is probably a modified mountain or river form, as suggested by the character of the main points of difference—a slight increase in the scale formula and number of dorsal ray supports (being frequently 12 instead of 11), and the more elongate body.

Among the fresh-water fishes of New Brunswick none are more common nor characteristic of its streams, rivers, and lakes than *Semotilus bullaris*, Raf., Silver or River Chub ; *Lepomis gibbosus*, L., Sun-fish, Pond-fish ; *Amiurus catus*, Gill, Horned Pout, Cat-fish ; and *Lota maculosa*, Cuv. & Val., Burbot, Cusk ; all of which are absent from the Gaspé rivers and lakes, and only one, *L. maculosa*, is known to the writer to occur in the Restigouche. They are, however, in the main peculiar to lakes, ponds, lowland streams, and the lower courses of rivers, and hence, possessing little power of dispersal, their transmission from one river system to another, especially in a mountainous country, is nigh impossible.

REPTILIA OF GASPE.

Though no part of the primary object of the investigation, it was thought desirable to examine the reptilian life of the peninsula, as far as time permitted, and append a list thereof to this report. Compared with that of New Brunswick, there is a dearth of both species and individuals.

BUFONIDÆ.

Bufo (lentiginosus) Americanus, Le Conte. Toad.

Quite common throughout the peninsula, and in the Maritime Provinces. In New Brunswick, where the writer has studied it for many years, its characters are very unstable. Indeed, varieties seem to be marked in some localities.

RANIDÆ.

Rana virescens, K. Green Frog.

Rather uncommon, but observed in every river valley. The subspecies *R. v. brachycephala*, Cope, the prevailing inland form in New Brunswick, was not met with, nor was the latter collected in P.E. Island by Roy Vanwart and the writer in 1896.

Common in the coast region of New Brunswick, and in less abundance in P.E. Island. Reported from Nova Scotia by J. M. Jones, Vol. I., pt. 3, p. 123, N.S. Inst Nat. Sc.

R. palustris, Le Conte. Marsh Frog.

Occasional in Gaspé. Everywhere in New Brunswick, but not abundant. Rare in P.E. Island (Vanwart and Cox), and not reported from Nova Scotia.

R. septentrionalis, Baird. Mink Frog.

Abundant in all suitable places in Gaspé, where it takes the place largely of *R. fontinalis*, Le Conte. Lately reported from New Brunswick. *Vide* Proceedings Nat. Hist. Ass. of Miramichi, N.B., No. 1, p. 14. Not reported from Nova Scotia, nor does it occur on P.E. Island.

R. fontinalis, Le Conte. Spring Frog.

Rather uncommon in Gaspé, its place being taken by the last species. Abundant in New Brunswick, Nova Scotia (J. M. Jones), and in P.E. Island.

Very variable in New Brunswick, where three types occur, *R. fontinalis nigricans*, Ag., a small black variety; *R. fontinalis clamitans*, a semi-terrestrial form, and the one mentioned in the list, which is the dominant type, especially in the northern part of the province.

R. sylvatica, Le Conte. Wood Frog.

Very rare in Gaspé. Generally distributed throughout the Maritime provinces.

HYLIDÆ.

Hyla picheringii, Storer. Tree Frog.

Common in Gaspé, where its note was heard in the valleys of all rivers. Common in all the Maritime provinces of Canada.

PLEURODELIDÆ.

Diemictylus viridescens, Raf. Spotted Newt.

In small ponds in valley of the Grand Pabos, and in lakes in the basins of the York and Dartmouth rivers. Common in New Brunswick, and reported also from Nova Scotia by J. M. Jones. Collected in P.E. Island (Afton Lake) by Vanwart and Cox, where it attains the largest size, known to the writer, and is peculiarly coloured.

D. v., var. *miniatus*, Hallowell, was not met with, though always found in New Brunswick in the near vicinity of ponds containing the Newt, of which it is a seasonal and terrestrial form. It would be interesting to ascertain if this strange temporary stage of development obtains northward.

Desmognathus fuscus, Raf. Painted Salamander.

No mature example of this species was collected, but abundant larvæ seen in small ponds at New Carlisle were judged to be of this form. Though given in old lists as occurring in New Brunswick, the writer has not met it here, but instead what may be a colour variety of the same, *D. ochrophæa*, Cope, identified by the discoverer himself. Vide "Batrachia of New Brunswick," by P. Cox, Bull. XVI., Nat. Hist. Soc. of N.B., p. 65. Hence the larvæ referred to may be of this alleged species.

PLETHODONTIDÆ.

Plethodon cinereus, var. *erythronotus*, Green. Red-backed Salamander.

Not uncommon on the peninsula. Generally distributed in the Maritime provinces of Canada, including P.E. Island.

AMBLYSTOMIDÆ.

Amblystoma Jeffersonianum, var. *laterale*, Hall.

Seems to be very rare, for, though industriously sought after, was collected at but one station, Grand River. Heard of at a few points.

Common in New Brunswick, where, as in Gaspé, the type is larger, the body longer in proportion to the head, the legs, too, relatively shorter, anal groove wanting, and pelvic and caudal folds well represented.

Not observed on P.E. Island, nor reported from Nova Scotia.

A. punctatum, L. Great Spotted Salamander.

No specimen seen, but its unique and conspicuous colour pattern cannot be confounded with that of any of our salamanders, and hence it is easily known from descriptive. Heard of at a few points in the peninsula.

Common in the Maritime provinces.

SNAKES.

Coluber vernalis, De Kay. Green Snake.

Observed at several points on the peninsula. All through the Maritime provinces.

C. sirtalis, Hobb. Spotted Snake.

Occasionally met with in Gaspé. Common also in the Maritime provinces.